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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,324	04/28/2004	Peter Bumbulis	SYB/0100.00	3323
31779 7590 10/19/2007 JOHN A. SMART 708 BLOSSOM HILL RD., #201 LOS GATOS, CA 95032-3503			EXAMINER VO, THANH DUC	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/709,324	BUMBULIS, PETER	
	Examiner	Art Unit	
	Thanh D. Vo	2189	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12-27, 29-37 and 39-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-14, 17-21, 27, 29-37 and 39-43 is/are rejected.
- 7) ☒ Claim(s) 15, 16, 22-26 and 44-47 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This Office Action is responsive to the Amendment filed on August 6, 2007. Claims 1, 16, 28, and 29 have been amended. Claims 28 have been canceled. Claims 1-10, 12-27, 29-37, and 39-47 are presented for examination. Claims 1-10, 12-27, 29-37, and 39-47 are pending.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1 and 29 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

As per claims 1 and 29, the specification of the current invention does not particularly disclose "**a search data structure mapping page names to pages in memory** of the multi-threaded computing system" (emphasis added). The specification discloses a searching method and a data structure but there is no teaching of such "search data structure mapping page names to pages in memory" as currently claimed.

The specification of the current invention further fails to disclose a method of "determining whether the particular page is in the cache without blocking access by other threads adding or removing other pages in the search data structure and without waiting for other threads adding or removing pages from the search data structure".

The specification only discloses a method of "determining whether the particular page is in the cache without blocking access by other threads" and a method of "adding or removing a page to or from a cache" but there the specification **does not particularly disclose as a whole** that a particular page is being searched in the cache without block access by other threads adding or removing other pages in the search data structure and without waiting for other threads adding or removing pages from the search data structure".

Furthermore, the specification fails to disclose "a search data structure" and how it is being used in combination with other limitations as being claimed in claims 1 and 29.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-10, 12, 17, 20, 27, 29-37, 41, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oliver (US Patent 6,029,190).

As per claims 1 and 29, Oliver substantially discloses a system for providing access to data in a multi-threaded computing system, the method comprising:

providing a memory(Fig. 4, item 410) containing pages of data in memory of the multi-threaded computing system (col. 1, lines 13-16, wherein pages of data are inherent in the system of Oliver because a page is a building block that contains data in a memory);

associating a latch/lock with each page in the memory to regulate access to the page, the latch allowing multiple threads to share access to the page for read operations and a single thread to obtain page for write operations (see Abstract, lines 8-10);

in response to the request from a first thread to read a particular page, determining whether the particular page is in the cache without blocking access by other threads to pages in the cache, wherein said determining step includes determining whether the particular page in the cache without acquiring a mutual exclusion object

(mutex) controlling access to pages in the cache (See Fig. 1 and its corresponding description on col. 3, lines 4-44, wherein the step 110 of Fig. 1 is to determine if the object is available and it is does not acquire the object until the step 114);

if the particular page is in the cache, attempting to obtain the latch for purposes of reading the particular page (col. 3, lines 39-43); and

allowing the first thread to read the particular page unless a second thread has latched the particular page on an exclusive basis (col. 3, lines 22-29).

Oliver did not explicitly disclose a cache. However, a cache is a form of memory that is taught by Oliver and it is well known in the art at that a cache allows the most frequently used data to store within until it is being replaced by another more frequently used data. Therefore, it would have been obvious to one having an ordinary skill in the art at the time of the Applicant's invention to implement a cache in the memory 410 of Oliver to take the advantage of the feature set forth in order to improve the data throughput and system performance.

As per claims 2 and 30, Oliver discloses a method, wherein the pages of data comprise database file pages. See col. 1, lines 13-16.

As per claims 3 and 31, a step includes organizing the pages of data in an array is an inherent feature of Oliver since data that store in memory 410 has to store in an array format since memory 410 is a semiconductor memory.

As per claims 4 and 32, a step includes providing an index facilitating access to pages in the cache is an inherent feature of Oliver since a data has to have an address in order to locate and access the data.

As per claims 5 and 33, a step of providing an index includes providing an index based upon a unique identifier assigned to each page in the cache in an inherent feature of Oliver since each data has to have unique address location otherwise system will read incorrect/wrong data and negatively affect the system performance.

As per claims 6 and 34, Oliver discloses a method, wherein said providing step includes maintaining state information for each page in the cache. See col. 3, lines 17-20, wherein the status of data is either locked/unavailable or unlocked/available.

As per claims 7 and 35, wherein assigning a unique identifier to each page is an inherent feature of Oliver since a data has to have an address in order to locate and access the data.

As per claims 8 and 36, unique identifier comprises a page name is an inherent feature of Oliver since a page of data contains information that is apparently be a name of that particular page.

As per claims 9 and 37, Oliver inherently suggesting a method of using an address/identifier (see claims 7 and 35) in order to access a particular data in the memory/cache (col. 1, lines 13-16).

As per claim 10, Oliver discloses the state information maintained for each page includes the latch/lock for regulating access to the page. See col. 1, lines 19-24.

As per claims 12 and 39, Oliver discloses a method, wherein said allowing step includes allowing the first thread to read the particular page concurrently with another thread reading the particular page. See col. 3, lines 4-6.

As per claims 17 and 41, Oliver discloses a method further comprising: if a second thread has latched the particular page on an exclusive basis, attempting to prevent reuse of the particular page. See col. 3, lines 22-29.

As per claim 18, the method wherein said attempting to prevent reuse step includes determining if the particular page is in the cache is an inherent feature of Oliver since the system of Oliver has to search for a particular page in the memory to determine the status of page in order to execute the prevent step if it has already been locked.

As per claims 19, Oliver discloses a method wherein said attempting to prevent reuse step includes incrementing an indicator associated with the particular page so as to indicate the first thread is waiting for access to the particular page. See col. 3, lines 6-16, wherein numReaders is the indicator.

As per claims 20 and 42, Oliver discloses a method comprising: maintaining a list of reusable pages representing pages in the cache that are available for reuse. See col. 4, lines 30-40, wherein the system is maintaining the availability status of the data that might be used by different threads.

As per claim 27, Oliver discloses a computer-readable medium comprising instructions (col. 8, claim 10) for performing the method of claim 1. The method of claim 1 is rejected under the same rationale as presented above.

4. Claims 13, 14, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oliver (US Patent 6,029,190) in view of Chauvel et al. (US Pub. 2002/0065992).

As per claims 13 and 40, Oliver did not explicitly disclose a method comprising:
if the particular page is not in the cache, attempting to install a cache entry for the particular page.

However, Chauvel et al. discloses a method of loading data into the cache in response to a miss. See Abstract, lines 4-9.

It would have been obvious to one having an ordinary skill in the art at the time of the Applicant's invention to combine the method of Chauvel et al. with the method of Oliver in order to arrive at the current invention. The motivation of doing so is to load the most recently requested data into the cache so that it will save time in the next process if the thread needs the same page of data.

As per claim 14, Oliver did not explicitly disclose a method, wherein said attempting to install step includes obtaining an unused cache entry.

However, Chauvel et al. discloses a method of obtaining the unused cache entry or least recently used (LRU) cache entry. See paragraph 0115, lines 5-10.

It would have been obvious to one having an ordinary skill in the art at the time of the Applicant's invention to modify the system of Oliver to combine with the system of Chauvel et al. in order to arrive at the current invention. The motivation of doing so is to determine a page/data in that cache that is not being used very often to be replaced with a more frequently used data in order to provide a more efficient and higher throughput system.

5. Claims 21 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oliver (US Patent 6,029,190) in view of Parson (US Pub. 2005/0166206).

As per claims 21 and 43, Oliver did not explicitly disclose a method, wherein the list of pages is structured as a reusable double-ended queue.

Parson discloses a double-ended queue. See paragraph 0011.

It would have been obvious to one having an ordinary skill in the art at the time of the Applicant's invention to realize the advantage of various method of queuing or sorting the data and determining one that is best suited for the current invention in order to improve the system performance and further enhancing the data processing.

Response to Arguments

6. Applicant's arguments with respect to claims 1-10, 11-27, 29-37, and 39-47 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments filed on September 21, 2007 have been fully considered but they are not persuasive.

The argument presented by Applicant is not persuasive because Applicant has read the specification onto the claim language of the current invention to argue against the reference cited rather than particularly point out a specific limitation in claims 1 and 29 of the current invention. In addition, Applicant further elaborated the claim language of claims 1 and 29 in the argument instead of reasonably arguing how each limitation of claims 1 and 29 could overcome the cited reference. For the reason above, Applicant is arguing for the limitations that are not being claimed.

Allowable Subject Matter

7. Claims 15, 16, 22-26, and 44-47 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh D. Vo whose telephone number is (571) 272-0708. The examiner can normally be reached on M-F 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Reginald G. Bragdon can be reached on (571) 272-4204. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2189

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


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AU 2189
10/13/2007



MANO PADMANABHAN

TC 2100